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PLANE AND SPHERICAL TRIGONOMETRY WITH TABLES. By George Wentworth and David Eugene Smith. Ginn and Co., Boston, 1915. iv+230+26+104 pages. $1.35.

PLANE AND SOLID GEOMETRY. By Webster Wells and Walter W. Hart. D. C. Heath and Co., Boston, 1916. vi+467 pages.

SCHOOL ALGEBRA. First Course. By H. L. Rietz, A. R. Crathorne, and E. H. Taylor. Henry Holt and Co., New York, 1915. v+271 pages. $1.00.

SCHOOL ALGEBRA. Second Course. By H. L. Rietz, A. R. Crathorne, and E. H. Taylor. Henry Holt and Co., New York, 1915. x+235 pages. $.75.

FIRST YEAR MATHEMATICS FOR SECONDARY SCHOOLS. 4th edition. By Ernst R. Breslich. University of Chicago Press, Chicago, 1915. xxiv+345 pages. $1.00.

A TWENTIETH CENTURY ARITHMETIC. By C. S. Jackson, F. J. W. Whipple, and Lucy Roberts. J. M. Dent and Sons, London, 1915. viii+495 pages.

PLANE GEOMETRY. By John W. Young and Albert J. Schwartz. Henry Holt and Co., New York, 1915. v+223 pages. $1.00.

HOW TO STUDY AND WHAT TO STUDY. By Richard L. Sandwick. D. C. Heath and Co., Boston, 1915. v+170 pages. $.60.

FUNDAMENTAL SOURCES OF EFFICIENCY. By Fletcher Durell. J. B. Lippincott and Co., Phila., 1914. 368 pages. $2.50.

BOOK REVIEWS.

Send all communications to W. H. BUSSEY, University of Minnesota.

Robert of Chester's Latin Translation of the Algebra of Al-Khowarizmi with an Introduction, Critical Notes and an English Version. By LOUIS CHARLES KARPINSKI, University of Michigan. The Macmillan Co., New York, 1915. 164 pages.

This monograph impresses the reader as being an exceedingly thorough study. It exhibits the modern trend toward a more searching and more critical study of historic material. Its scope is comprehensive. It is much more than a reprint of Robert of Chester's Latin translation from the Arabic, accompanied by a translation into English. It contains in outline the development of algebra before the time of Al-Khowarizmi, an account of Al-Khowarizmi's Algebra and Arithmetic, and their bearing upon the development of mathematics. Much biographical detail is gleaned from out-of-the-way sources, pertaining to Al-Khowarizmi, Robert of Chester and other medieval writers who prepared translations of, or were directly influenced by, the algebra of the great Mohammedan. Robert of Chester's Latin translation was made in the twelfth century. The different extant manuscripts are compared and the deviations from the text of Scheybl, which is followed in this edition, are given in foot-notes with a minutia that seems almost excessive. A Latin glossary assists the reader in making out the medieval

Latin. Added interest is secured by photographic reproductions of pages from the three most complete manuscripts of Robert of Chester's translation. Neither time nor expense has been spared in making the monograph a minute, yet attractive study of the earliest translation into Latin of the famous Arabic text. More profoundly than any other work on algebra that was brought out during the twelve centuries intervening between Diophantus and the Italians, Tartaglia and Cardan has that Arabic text influenced the progress of algebra in the Occident.

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Analytic Geometry. By H. B. PHILLIPS. John Wiley and Sons, New York, 1915. With answers to exercises. vii+197 pages.

The author tells us in his preface that "he has written this text to supply a course that will equip the student for work in calculus and engineering without burdening him with a mass of detail useful only to the student of mathematics for its own sake. . . . If more than the briefest course is given, the best way to spend the time is in working a large number of varied examples based upon the few fundamental principles which occur constantly in practice."

A wise innovation is a brief discussion of the vector, its use illustrated by a few simple problems such as the division of a line in given ratio, the area of a triangle in terms of the coördinates of its vertices, and the location of the center of gravity of a system of weights. But our author straightway abandons this excellent line of procedure and in the sequel has no regard for the directions on any lines other than the coördinate axes. The angle φ "from the positive direction of the x-axis to the line MN," as used here, is the least positive angle that can so be measured. If two lines L_1 and L_2 make with the x-axis the angles φ_1 and φ_2, then the angle β from L_1 to L_2, according to the text (p. 41), is $\varphi_2 - \varphi_1$ in every case. But if $\varphi_1 > \varphi_2$, this angle is obviously $180° + \varphi_2 - \varphi_1$, unless we regard β as then negative, contrary to custom and contrary to our author himself in the very first application he makes of the familiar formula for tan β (Ex. 3, p. 41. The angle from AB to AC is negative according to the definition of β on p. 41.) It seems to me a matter of regret that the teacher in his class room should accept without comment as to general validity a demonstration based merely on the most obvious geometrical construction. That this careless attitude should find place in our textbooks is a matter for serious concern.

In Art. 26 it seems to me that we have the distance from the line $Ax + By + C = 0$ to the point (x_1, y_1) rather than the distance from the point to the line, but since we are told that such a sign must be used with $\pm \sqrt{A^2 + B^2}$ that the result be positive, this is a matter of little moment.

The definitions of fundamental curves and their properties deserve mention. The slope of the line determined by the points (x_1, y_1) and (x_2, y_2) is *by definition* $m = (y_2 - y_1)/(x_2 - x_1)$, the term inclination is not used. As working tools, one uses only two forms for the rectangular equation of the straight line, $y - y_1 = m(x - x_1)$, and $y = mx + b$. The ellipse is obtained through deformation of